USSR

UDC 621.791.052.004.12:562.012.7

VOLCHENKO, V. N., Candidate of Technical Sciences, MSLOV, B. G., Engineer (Moscow Higher Technical School imeni N. E. Bauman), and VOLKOV, A. S., Candidate of Technical Sciences (Podol'sk Machine Building Plant imeni S. Ordzhonikidze)

"Use of Statistical Method in Testing Its Welding Quality"

Moscow, Svarochnoye Proizvodstvo, No 11, Nov 70, pp 35-37

Abstract: A transition must be made from passive rejection of unsuitable products to active control of production quality. One means of organizing this transition is statistical testing of products. It allows rejects to be prevented and helps to increase the culture of production systematically. The system and indicators used to consider the defect rate of welded seams by types of defects and corrections for them as a function of the parameters influencing welding quality can be used with production testing of products both by destructive and by nondestructive methods. Its use requires the development of special types of test documentation considering both the results of testing and the principal parameters of welding

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VOLCHENKO, V. N., et al., Svarochnoye Proizyvodstvo, No 11, Nov 70, pp 35-37

technology. This allows the causes of rejects to be determined and measures to be developed to prevent them. Methods of mathematical statistics are described allowing the stable (mean) level of rejection of welded products to be determined for each type of production condition.

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1/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--EFFECT OF HEAT TREATMENT ON THE MAGNETIC PROPERTIES AND QUALITY FACTOR OF THE SEVERELY WORKED ALLOY 42NKHTYU, ELINVAR -U-

AUTHOR-(02)-VOLKOV, A.S., CHINENKOVA, S.V.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, FEB. 1970, 29, (2), 433-436

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--IRON NICKEL ALLOY, ALLOY HEAT TREATMENT, MAGNETIC PERMEABILITY, ALLOY PHASE TRANSFORMATION, CURIE POINT, DISPERSION HARDENING, ANNEALING TEMPERATURE, HOT WORKING/(U)42NKHTYU IRON NICKEL ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0344 STEP NO--UR/0126/70/029/002/0433/0436

CIRC ACCESSION NO--AP0129576

UNCLASSIFIED

2/2 031

CIRC ACCESSION NO--AP0129576 UNCLASSIFIED PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MAGNETIC AND MECHANICAL PROPERTIES OF THE ELINVAR ALLOY 42NKHTYU (FE, 42PERCENT NI, 5.5 CR, 2.7 TI) SUBJECTED TO A SEVERE DEGREE OF WORKING AND ANNEALED AT VARIOUS TEMP. WERE STUDIED. THE MAGNETIC PERMEABILITY IN PARTICULAR WAS VERY SENSITIVE TO THE TEMP. OF HEAT TREATMENT AND ALSO THE TEST TEMP. THESE EFFECTS WERE CORRELATED WITH PHASE TRANSFORMATIONS AS INDICATED BY THE X RAY DIFFRACTION PATTERNS OF THE CORRESPONDING MATERIALS. A CONSIDERABLE FALL IN CURIE POINT ACCOMPANYING DISPERSION HARDENING WAS ATTRIBUTED TO A REDUCTION IN EXCHANGE ENERGY WHICH PASSES THROUGH A MIN. AT 550DEGREESC.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PECULIARITIES OF THE INTERPRETATION OF X RAY PHOTOGRAPHS OF AUSTENITIC STEELS -U-

AUTHOR-(05)-DOLGIY, A.A., VOLKOV, A.S., STAROSTIN, A.P., MIKITAS, A.P., PANOV, A.YE.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, SVAROCHNOYE PROIZVODSTVO, NO 3, 1970, PP 36-37

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--AUSTENITIC STEEL, BIBLIOGRAPHY, WELD DEFECT, X RAY TECHNIQUE, RADIOGRAPHIC JOINT INSPECTION, RADIOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1316 STEP NO--UR/0135/70/000/003/0036/0037

CIRC ACCESSION NO--AP0123275

UNCLASSIFIED

2/2 033

UNCLASSIFIED

CIRC ACCESSION NO--AP0123275

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT HAS BEEN ESTABLISHED THAT APPARENT DARKENING OF THE FILM OBSERVED UPON X RAYING OF WELDS IN AUSTENITIC STEEL ARE FREQUENTLY A RESULT OF THE OVERHEATING OF THE WELD AND NOT THAT OF THE PRESENCE OF DEFECTS IN IT.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--OIL EMULSION COOLANTS FOR ENGINES -U-

AUTHOR-(05)-BUTKOV, N.A., OSIPOVA, L.M., VOLKOV, A.S., DRESKOV, A.A.,
KOZHIN, V.P.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,585

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--03MAR70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, PROPULSION AND FUELS

TOPIC TAGS--EMULSION, CHEMICAL PATENT, HEAT TRANSFER FLUID, THIOL,
MERCAPTAN, BENZENE DERIVATIVE, ORGANIC AZOLE COMPOUND, PHOSPHATE ESTER,
ANTICORROSION AGENT, MARINE ENGINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/0088 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0127715

UNCLASSIFIED

2/2 030
CIRC ACCESSION NO--AA0127715 UNCLASSIFIED PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN OIL EMULSION FOR COOLING SHIP
ENGINES, HAVING IMPROVED ANTICORROSION AND ANTICAVITATION PROPERTIES AND
IMPROVED HEAT TRANSFER, CONTAINS H SUB2 O 98-9, AROMATIZED OIL
0.712-1.424, NA SULFONATE 0.070-0.140, K NAPHTHENATE 0.180-0.360, 1,4
BUTYNEDIOL 0.010-0.020, MERCAPTOBENZOTHIAZOLE 0.003-0.006, CR STEARATE
0.005-0.0010, AND ALKYLZINC DITHIOPHOSPHATE 0.020-0.040PERCENT.

UNCLASSIFIED

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USSR

UDC:669.187.6

VOLKOV, A. Ye., and BOYARSHINOV, V. A.

"Relationship of Dendritic Structure to Conditions of Crystallization During Remelting Processes"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 184-189

Translation: A hypothesis is suggested for the formation of secondary dendritic axes, according to which the secondary axis is formed at the moment when supercooling in the liquid bath before the tip of the main dendrite axis is identical in the forward and lateral directions.

Under certain assumptions, a dependence is produced for the distance between second order axes, rate of crystallization, and effective impurity distribution factor.

Good coincidence is established between the distances between second order axes calculated according to the formula suggested and the distances measured for ingots of type ShKh15 steel, crystallized in an ordinary mold and in the process of vacuum arc remelting. 7 figures; 7 biblio. refs.

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USSR

UDC: 621.384.6.5 8

ARZUMANOV, A. A., NEMENOV, L. M., ANISIMOV, O. K., BATALIN, S. S., VOLKOV, B. A., GROMOV, D. D., KRAVCHENKO, Ye. T., KRUGLOV, V. G., NIGMATOV, M. Kh., POPOV, Yu. S., PROKOV'YEV, S. I., and RYBIN, S. N.

"Isochronic Cyclotron With Controllable Ion Energy"

Alma-Ata, *Izvestiya AN KazSSR--Teriya Fiziko-matematicheskaya*, No 4, 1973, pp 6-15

Abstract: A discussion of the isochronic cyclotron with controllable ion energy built around the U-150-2 accelerator installed in the Institute for Nuclear Physics of the Kazakh SSR Academy of Sciences in 1965 is given. Calculations of the fundamental parameters made with an electronic computer are presented, together with the results of a theoretical analysis, a large part of which was based on approximation methods. These results were verified by a numerical method. The description is given of a program developed for investigating and modeling the magnetic field on a mock-up with a scale of 1:3. An outline drawing of the magnetic arrangement is given, along with curves of the magnetic field. The current correction for the magnetic field is explained, with an illustrative photograph of the correction winding. Also discussed are the

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UDC: 631.384.6.5

ARZUMANOV, A. A., et al, Izvestiya AN KazSSR--Teriya Fiziko-matematicheskaya, No 4, 1973, pp 6-15

high-frequency system and the slit-type ion source, the ions entering the accelerator chamber radially. Curves for the change in beam intensity for accelerated alpha particles are plotted as a function of the accelerator radius. A photograph of the area of installation, showing a beam of protons in air with an energy of 30 Mev, is reproduced together with a photograph of the equipment itself.

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USSR

UDC 621.396.69(088.8)

VALITOV, M. S., VOLKOV, B. A., FEDYUNIN, V. N., DEART, A. F., KSENOFONTOV, Ye. A., Moscow Mining Institute

"A Device for Physical Modeling of Radio Electronic Circuits"

USSR Author's Certificate No 255665, Filed 13 Mar 67, Published 12 Mar 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V402 P)

Translation: The proposed device is based on the use of a random number pickup whose output is connected to the movable contact of a step switch in the situation set-up module. This step switch is connected to the control windings of actuating relays, indicator lamps and pulse counters. N. S.

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USSR

UDC 669.14.018.44:534-8

PON'KIN, YU. F., ~~VOLKOV, B. I.~~, KUDRYAKOVA, L. P., MINTS, I. I., and KUZNETSOVA, G. V.

"Effect of Ultrasonic Vibrations on Mechanical Properties and Fine Structure of 12Kh1MF Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1971, pp 67-68

Abstract: A study was made of the aging of 12Kh1MF steel (0.11% C, 0.20% Si, 0.46% Mn, 1.12% Cr, 0.20% Ni, 0.27% Mo, 0.22% V) under the action of ultrasonic vibrations. Billets were normalized at 980° C and tempered at 740° C. Ultrasound-induced changes in properties were compared with changes in the same properties as a result of thermal aging without stress. A comparison was made of fine structure, short-time mechanical properties, the content of carbide-forming elements (chromium, molybdenum, vanadium) in the anode deposit and the time until failure

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PON'KIN, YU. F., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1971, pp 67-68

at $\sigma = 16$ kg/mm^2 and 585°C. The results indicate that the processes occurring in 12Kh1MF steel as a result of the action of 20 kHz ultrasonic vibrations correspond to the processes taking place during thermal aging without stress, but that they occur at a much more rapid rate. Ultrasonic vibrations with a certain peak pressure can be used for accelerated long-time strength testing of 12Kh1MF-type steels.

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USSR

UDC 612.014.41

BRESLAV, I. S., VOLKOV, B. N., and MITYUSHOV, V. M., Laboratory of Respiratory Physiology, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR

"Recording Human Respiration in Pressure Chamber Experiments"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, No 5, 1970, pp 805-807

Abstract: The parameters of human respiration in a pressure chamber often have to be recorded in experiments designed to study the effect of a rarefied atmosphere and hypoxia on physiological functions. However, there are some difficulties in carrying out such experiments, e.g., the small size of the chamber cannot accommodate a clumsy piece of apparatus like a spirograph, and if the spirograph is placed outside, it cannot function normally because of the difference in air pressures inside and outside the chamber. A further complication arises when the subject is required to inhale gaseous mixtures of different compositions. To overcome these difficulties, the authors designed a compensating valve that is mounted in the wall of a standard PBK-53 pressure chamber. The subject inhales gaseous mixtures from a spirograph passed through tubes connected to the valve.

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72 032 UNCLASSIFIED PROCESSING DATE--160CT70

ILE--EFFECT OF SYNTHESIS CONDITIONS ON THE PROPERTIES OF POLY(AMINO
AMIDO ACIDS) -U-
THOR-(05)-KORSHAK, V.V., DOROSHENKO, YU.E., TEPLYAKOV, M.M., FEDOROVA,
R.D., VOLKOV, B.V.
UNTRY ~~OF INFO~~--USSR

URCE--VYSOKOMOL. SOEDIN. SER. A 1970, 12(3), 677-80

TE PUBLISHED--------70

BJECT AREAS--CHEMISTRY, MATERIALS

PIC TAGS--CHEMICAL SYNTHESIS, POLYMER, POLYCONDENSATION, AMINE,
PYROMELLITIC ACID, ANHYDRIDE, LOW TEMPERATURE EFFECT, POLYAMIDE
COMPOUND, MECHANICAL STRENGTH

NTROL MARKING--NO RESTRICTIONS

CUMENT CLASS--UNCLASSIFIED
OXY REEL/FRAME--1992/0309 STEP NO--UR/0459/70/012/003/0677/0680

RC ACCESSION NO--AP0111503

UNCLASSIFIED

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UNCLASSIFIED

RC ACCESSION NO--AP0111503

PROCESSING DATE--16OCT70

STRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYCONDENSATION OF CH SUB2 (C SUB6 H SUB3 (NH SUB2) SUB2-3,4) SUB2 WITH PYROMELLITIC ANHYDRIDE (I) IN HCONME SUB2, ACNME SUB2, OR N-METHYL-2-PYRROLIDINONE AT MINUS 30DEGREES TO PLUS 20DEGREES GAVE II. II MOL. WT. WAS MAX. AT MINUS 20DEGREES AND WAS VERY SUBSTANTIALLY INCREASED WHEN 5PERCENT I MOLE EXCESS WAS USED; HCONME SUB2 OR ACNME SUB2 WERE THE BEST SOLVENTS. THERMAL DEHYDRATION OF II GAVE POLYCYCLIC LADDER POLYAMIDES OF INCREASED MECH. STRENGTH.

UNCLASSIFIED

1/3 031 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--THERMAL AND DIFFUSION RELAXATION OF AN EVAPORATING DROP WITH
INTERNAL HEAT EMISSION -U-
AUTHOR-(02)-VOLKOV, F.G., GOLOVIN, A.M.

COUNTRY OF INFO--USSR

SOURCE--NOVOSIBIRSK, AKADEMIYA NAUK SSSR, SIBIRSKOYE OTDELENIYE ZHURNAL
PRIKLADNOY MEKHANIKI I TEKHNICHESKOY FIZIKI, NO 1, JAN-FEB 70, PP 78-87
DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--REYNOLDS NUMBER, MATHEMATIC ANALYSIS, HEAT FLUX PICKUP, HEAT
DIFFUSION, GAS RELAXATION, RELAXATION PROCESS, EVAPORATION, HEAT OF
VAPORIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0962 STEP NO--UR/0207/70/000/001/0078/0087

CIRC ACCESSION NO--AP0126609
UNCLASSIFIED

2/3 031 UNCLASSIFIED
CIRC ACCESSION NO--AP0126609 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBLEMS OF THE NONSTATIONARY EVAPORATION OF A HEAT EMITTING DROP WITH A UNIFORM DISTRIBUTION OF INTERNAL HEAT SOURCES IS CONSIDERED. THE ASSUMPTION ON THE SMALLNESS OF THE REYNOLDS (R EQUALS UA-V SMALLER THAN 1) AND PECLET (P SUBD EQUALS US-D SMALLER THAN 1) NUMBERS, WHERE A IS THE DROP RADIUS, U IS THE RELATIVE SPEED OF MOTION, AND V, D, X ARE THE VISCOSITY, DIFFUSION AND TEMPERATURE CONDUCTIVITY COEFFICIENTS OF THE VAPOR GAS MEDIUM, MAKES IT POSSIBLE TO NEGLECT CONVECTIVE VAPOR AND HEAT TRANSFER, AND TO CONSIDER THE CONCENTRATION AND TEMPERATURE FIELDS AS SPHERICALLY SYMMETRICAL. SINCE THE DENSITY OF THE SATURATED VAPOR IS SMALLER THAN THAT OF THE LIQUID, CONVECTIVE FLOW RESULTING FROM VARIATION OF THE DROP RADIUS IS NOT TAKEN INTO ACCOUNT. BASIC EQUATIONS ARE ESTABLISHED FOR THE PROBLEM OF THE DIFFUSION AND THERMAL RELAXATION OF A DROP AT TEMPERATURE T SUBO WITH INTERNAL HEAT SOURCES WHICH, SUDDENLY FINDS ITSELF IN A MEDIUM WITH TEMPERATURE T SUBINFINITY. FROM THESE EQUATIONS THE TEMPERATURE DISTRIBUTION IS DETERMINED, ASSUMING THAT ENERGY TRANSFER FROM THE DROP TO THE GAS IS ACCOMPLISHED BY RADIATION, DIFFUSION, THERMAL CONDUCTIVITY, AND THE DIFFUSION THERMAL EFFECT. THE DIFFUSION AND HEAT FLOWS RESULTING FROM THE MOLECULAR HEAT CONDUCTIVITY ARE SUBSEQUENTLY DETERMINED.

UNCLASSIFIED

3/3 031

CIRC ACCESSION NO--AP0126609 UNCLASSIFIED PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--IT IS SHOWN THAT UNDER CERTAIN CONDITIONS A QUASISTATIONARY REGIME OF DROP EVAPORATION IN THE TIME PERIOD TAU SUBO IS SMALLER THAN T IS SMALLER THAN OR SIMILAR TO TAU EXISTS, IF THE HEAT QUANTITY, ABSORBED OR EMITTED BY THE UNIT OF DROP VOLUME IN THE PROCESS OF TEMPERATURE RELAXATION, SUBSTANTIALLY EXCEEDS THE HEAT EXPENDITURES ON THE UNIT OF VOLUME OF THE VAPOR GAS MEDIUM RELATED TO THE PHASE TRANSITION WITH THE VARIATION OF VAPOR CONCENTRATION EQUAL TO (P S INFINITY MINUS P 1 INFINITY). EXPRESSIONS ARE DERIVED FOR DIFFUSION AND HEAT FLUX VARIATIONS WITH LARGE TIME PERIODS.

UNCLASSIFIED

USSR

VOLKOV, G. A., MISYUK, L. A., and PETRUSHENKO, V. V., Leningrad

"The Bioelectric Reaction of Plant Cells to Light"

Kishinev, Elektronnaya Obrabotka Materialov, No 2, 1971, pp 65-68

Abstract: The mechanism by which a sudden illumination of Nitella flexilis increases the resting potential across its plasmalemma by about 60 mV was investigated to link the absorption of light which occurs in chloroplasts and the response which occurs on the external cytoplasmic membrane. By comparing known theories and facts with their own experimental results (recording of resting potentials from Nitella flexilis plasmalemma in darkness and light with and without addition of photosynthesis inhibitors and cofactors and of bicarbonates), the authors conclude that bicarbonate is involved in both reactions, those occurring in chloroplasts and those taking place in the plasmalemma. In light, intracellular bicarbonate is drawn (either directly or after being converted into carbonic acid) into the Calvin cycle, its intracellular concentration decreases, its concentration gradient across the plasmalemma changes, and the latter produces the effect of a temporary increase in the plasmalemma's permeability to bicarbonate.

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USSR

UDC 911.3.616.988.43(477)

VOLKOV, G. A.

"Eradication of a Primary Focus of Foot-and-Mouth Disease"

Tr. Kaliningr. n.-i. vet. st. (Works of the Kaliningrad Scientific Research Veterinary Station) vyp. 4, 1970, pp 111-114 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract 1.36.102)

Translation: The source of the disease was by-products brought in 1966 from the Konotopskiy Meat Combine of the Sumskaya Oblast Ukrainian SSR. No new cases of the disease were observed in the oblast.

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1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--MECHANISM OF FORMATION OF A VISCOSE CORD FIBER -U-

AUTHOR--VOLKOV, G.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VOLOKNA 1970, (1) 22-4

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--RAYON, XANTHIC ACID, ESTER, SURFACE ACTIVE AGENT, CHEMICAL REACTION MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0192 STEP NO--UR/0183/70/000/001/0022/0024

CIRC ACCESSION NO--AP0106848
UNCLASSIFIED

CIRC ACCESSION NO--AP0106848

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MAIN FACTORS AFFECTING THE CROSS SECTIONAL STRUCTURE AND THE SHAPE OF VISCOSE (I) FIBERS ARE DISCUSSED WITH REF. TO DATA OBTAINED FROM THE LITERATURE AND IN ANALOGY TO CRYSTN. OF METALS. IN THE PROPOSED MECHANISM A XANTHATE GRANULE IS PRESUMED TO BE A STRUCTURAL ELEMENT INVOLVED IN THE COAGULATION OF I, TRITHIOCARBONATES ARE PRESUMABLY THE COAGULATION SITES, AND THE MODIFIER IS A SURFACTANT WHICH PREVENTS H PRIME POSITIVE FROM PENETRATING INTO THE XANTHATE GRANULES, WHEREAS ZNSO SUB4 IS CONSIDERED TO BE A STRONG SURFACE DEHYDRATING AGENT.

USSR

UDC 621.357.1.035(088.8)

KUBASOV, V. L., VOLKOV, G. I.

"Method of Separation of Alkali Metal Amalgams"

USSR Author's Certificate No 303367, Filed 29/10/62, Published 5/07/71, (Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No 3 L261 P from the Resume).

Translation: A method of separation of alkali metal amalgams during mercury electrolysis using a graphite cathode by application of an external current differs in that in order to intensify the process, the graphite cathode is submerged in the amalgam and the process is conducted at D_k, exceeding the D of the short-circuit current of the cathode with the amalgam, but less than the D of the short-circuit current of the cathode with mercury.

1/2 018 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--MECHANISM OF THE INFLUENCE OF CALCIUM IONS ON HYDROGEN LIBERATION DURING THE PREPARATION OF CHLORINE AND CAUSTIC BY ELECTROLYSIS WITH A

AUTHOR--KORSHUNOV, V.N., GLADKIKH, I.P., VOLKOV, G.I.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(1), 117-20

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMALGAM, REACTION KINETICS, CHEMICAL DECOMPOSITION, CALCIUM CHLORIDE, CHLORIDE ELECTROLYSIS, GAS ANALYSIS, HYDROGEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0330 STEP NO--UR/0364/70/006/001/0117/0120

CIRC ACCESSION NO--AP0055121

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0055121
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETICS OF THE CA AMALGAM DECOMPN. IN 5N CACL SUB2 SOLNS. HAS BEEN STUDIED AT 25, 50, 75 AND 90DEGREES; THE RATE CONSTS. OF THE REACTION CA(HG) PLUS 2H SUB2 O YIELDS CA(OH) SUB2 PLUS H SUB2 PLUS HG HAVE BEEN CALCD. IT IS CONCLUDED THAT THE INCREASE OF H CONTENT IN THE GASEOUS PHASE OF THE ELECTROLYTIC CELLS IS CAUSED BY THE CA(OH) SUB2 PPT. COVERING THE HG CATHODE.

UNCLASSIFIED

USSR

UDC: 619:614.94:612.014.464

VOLKOV, G. K., All Union Scientific Research Institute of Veterinary Medicine

"Effect of Negatively and Positively Charged Aeroions on the Resistance of Calves"

Moscow, Veterinariya, No 2, 1971, pp 33-34

Abstract: A group of calves kept in a building with negatively charged aeroions for 60 days were found to be healthier and more resistant to disease than the controls, as shown by a rise in antibody titers and increases in the following: phagocytic index by 0.2 to 0.49, accumulation of RNA in lymphocytes by 5.2 to 9.4%, content of gamma globulins by 3.76 to 4.04%, dehydrogenases by 28%, cholinesterase by 9 to 24%, hemoglobin by 0.5 g%, and erythrocytes by 495,000. In addition, the experimental calves weighed an average of 4.2 kg more than the controls, which had twice as many cases of rhinitis and bronchitis. Exposure of calves to positively charged light ions slowed the metabolic processes, as shown by decreases in the following: hemoglobin by 0.6 to 1.4 g%, erythrocytes by 654,000 to 859,000, cholinesterase by 5.4%, gamma globulins by 2.2%, and antibody titers. After 2 months the experimental calves weighed an average of 3.4 kg less than the controls. The incidence of rhinitis was the same in both groups.

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USSR

UDC 549.21:620.183.2:539.24/25

VOLKOV, G. M., and KNOROZ, L. I.

"Periodicity in the Properties of Pyrolitic Carbon Filaments"

Moscow, Doklady Akademii Nauk SSSR, Vol 205, No 6, 1972, pp 1382-1384

Abstract: Chemical etching was used to remove the surface of pyrolytic carbon filaments (PCF). The remaining nucleus was oxidized in air at 800°C. Microphotographs of this sections show PCF cross-sections before and after oxidation. The filaments are composed of concentric shells of alternating high and low chemical reactivity. This is demonstrated in the electron micrograph of a PCF cross-section after oxidation which has the appearance of a rose. The PCF have reaction characteristics different from pyrographite which may be a function of differences in the temperature of formation.

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USSR

UDC 539.61:620.17:546.26-162

VOLKOV, G. M., BARABANOV, V. N., VIRGIL'YEV, YU. S., ZAKHAROVA, YE. N., and LEONT'YEV, YE. A.

"The Influence of Crystallite Size Upon the Strength of Coal-Graphite Materials"

Kiev, Problemy Prochnosti, No 1, Jan 72, pp 113-115

Abstract: The influence of the nuclear and electron structure of a graphite crystallite upon the mechanics of its breakdown is studied. Use is made of molecular diagrams of some compounds of the homologic series of aromatic hydrocarbons, obtained by Pulman via wave-mechanics calculations by the method of molecular orbits. The influence of the size of graphite crystals upon the strength of carbon pyroceramic material was demonstrated. The experimental data were compared with results of structural research by optical-microscope and electron-microscope methods. Three figures, 4 references.

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USSR UDC 539.61:620.17:546.26

VOLKOV, G. M., BARABANOV, V. N., DERGUNOV, N. N., ZAKHAROVA, Ye. N., and KALUGIN, V. I., Moscow

"The Effect of the Structure of Graphite on Its Strength"

Kiev, Problemy Prochnosti, No 12, Dec 72, pp 65-67

Abstract: The mechanical strength of artificial graphites depends not only on the dispersed structure of the material, but also on its crystalline and supermolecular structure, which is the secondary structure developed as a result of different arrangement of crystallites. The effect of artificial defects of supermolecular structure on mechanical strength of pyrographite and its bonding strength is discussed by reference to diagrams and photomicrographs of its polished surface. The effect of precipitation strengthening of carbonic material as a result of decreased concentration effect of supermolecular structural defects was used for the development of a new class of carbon materials, the carbonic Pyroceram. The characteristics of the USB-15 Pyroceram are presented. Five illustrations, eight bibliographic references.

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USSR

UDC 681:327.21:003.63:621:391.19

VOLKOV, G. T.

"On the Effect of the Structure of the Receptor Field on the Discrimination of Image Elements"

Uch. zap. Penz. politekhn. in-t (Scientific Notes of Penza Polytechnical Institute), 1972, No 2, pp 59-62 (from RZh-Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 11, Nov 72, Abstract No 11B398)

Translation: In designing the receiving device of a read-out automaton for operation with several styles of type it is necessary to select the necessary form of the read-out aperture. There are two possible ways of changing the aperture: changing the aperture in the electron-optical converter, and obtaining from the initial orthogonal grid a new grid whose elements are formed from elements of the initial grid by summation according to a certain law. A change in the grid leads to the loss of a certain number of points of the image. To reduce the effect of these losses it is necessary to increase the resolution of the initial receptor field. 1 ill. O. B.

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USSR

UDC 534.222.1

VOLKOV, I. I., Leningrad Hydrometeorological Institute, Department of Oceanography

"Caustic Curves During Positive Refraction in the Case of a Two-Layer Medium"

Moscow, Akusticheskiy Zhurnal, Vol 19, No 4, 1973, pp 505-511

Abstract: Consideration is given to the conditions of the formation of caustic curves in a two-layer medium, where both layers are inhomogeneous and have positive sonic gradients G_1 and G_2. It is shown that if the sonic gradient in the second layer is greater than in the first ($G_2 > G_1$), a set of beams is given off from the beams reflected in the first layer, which form caustic curves on the ascending branches of the beams. A method is presented for calculating the field at the caustic curves and in their vicinity. Formulas are obtained, on the basis of which branches of the caustic curves are calculated for ten three-dimensional periods of the beams, as well as amplification of the sound intensity at the branches of the caustic curves and in their vicinity. 3 figures. 2 references.

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USSR

UDC: 534.2:532

VOLKOV, I.I., Leningrad Hydrometeorological Institute

"Caustics in Three-layer Subsea Acoustic Channel"

Leningrad, Rukopis' Dep. v VINITI No 4666-72 Dep. ot 7 avg. 1972 g. (Department Manuscript in VINITI No 4666-72 Dep. of 7 Aug 72), 1972, 23 sheets (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2B209 by the author)

Translation: Conditions for the caustics formation are investigated and the caustic field is calculated for the case of a three-layer subsea acoustic channel, when two layers with negative acoustic velocity gradients G_1 and G_2 are located above the axis of the channel and one layer with a positive acoustic velocity gradient G_3 below the axis of the channel. It is shown that the rays, undergoing complete internal reflection inside the second and third layers, form caustics above the axis of the subsea acoustic channel in the second layer on the rising legs of the rays and below the axis inside the third layer on the descending legs of the rays, two caustic legs in each layer spaced by one space period of the rays. The rays, undergoing complete internal reflection

USSR

VOLKOV, I. I., Rukopis' Dep. v VINITI No 4666-72 Dep. ot 7 avg. 1972 g, 23 sheets (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2B209

inside the first to third layers, also form two caustic legs, spaced by one space period of the rays, having the same directions as the rays undergoing complete internal reflection in the second and third layers.

The first system of caustics starts at the emission point level and ends above the axis of the subsea acoustic channel on the boundary of the first and second layers and below the axis approximately at the depth where the ray from the boundary of the first and second layers undergoes complete internal reflection.

The second system of caustics starts at the lower boundary of the first layer and extends upward to the surface and downward through the second and third layers to the bottom. Coordinates of caustic legs and caustic fields for five space periods of the rays are calculated.

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USSR UDC 621.317.421

MELIK-SHAKHNAZAROV, V. P., VOLKOV, I. I., BARANOV, A. A. and KORGANOVA, O. G.

"Device for Measuring the Induction of Constant Magnetic Fields"

Moscow, Izmerital'naya Tekhnika, No 6, 1972, pp 51-52

Abstract: A uniquely designed, self-compensating device for measuring the induction of constant magnetic fields, operating on the basis of a commercially available Hall generator, has been developed by the authors at the "Information Measurement Engineering" department of the Kuybyshev Polytechnical Institute. This device does not possess the drawbacks of the devices conventionally used for this purpose, such as manual balancing and thermal stabilization of the Hall generator, and a value of the electrical output signal which is insufficient for automatic signal measurement and recording.

The specifications are: measurement limits - 0.001 0.01, 0.1 T; basic error, not taking into account the error of the output instrument, about 1%; nominal output current - 3 ma; pass band ÷ 1 Hz; supply voltage 220v ≠ 10%, 50 Hz. The device is made from series-produced, domestically manufactured subassemblies and parts, and is suitable for expensive application in various branches of the electrical engineering industry, as well as for development

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USSR

MELIK-SHAKHNAZAROV, V. P., et al., Izmeritel'naya Tekhnika, No 6, 1972, pp 51-52

and research on various automation and information-measurement facilities. 2 figures. 4 references.

2/2

VOLKOV, I. P.

SO: JPRS 53103
12 May 71

SOCIOMETRIC ANALYSIS OF A GROUP'S CREATIVE POSSIBILITIES

I. P. Volkov

pp 59-62

(Social psychology)

There is a great quantity of experimental data accumulated during the history of sociometric research that indicates a decisive significance of the nature and composition of relationships within small social groups with respect to the productivity in solving group problems, and the morale. The significance of these factors is continuing to grow even more in creative, constructive training or scientific research work, since the process of social intercourse involves all of the basic channels for receiving , processing, and storing intellectual and social information. For example, productive training of a student or successful work of a scientist is unimaginable without comfortable conditions for socialization with colleagues and instructors. These conditions are created through joint coordination of the group members' basic needs and interests, by means of structuring the group.

Thus a number of social, psychological phenomena of a group nature, in addition to individual factors determining the success of a student's training in a university, have an essential influence on the character of his learning and creative productivity. The psychological atmosphere of relationships among members of a learning group with respect to different training and personal motives has an important significance for regulating the style of behavior. This atmosphere reflects the functional properties of the group structure. A positive psychological atmosphere in a student group, for example, endowed with a common interest toward scientific and learning activity, raises personal and group productivity. An atmosphere of conflict, stress, or indifference generates passivity, a tendency toward individualism, thus reducing the natural possibilities of the group and the psychological status of its members.

Sociometry is a most effective method for evaluating the conditions for socialization in the group structure as well as the atmosphere for socialization. A comparison of data from sociometric measurements and indicators of group productivity makes it possible to judge the role of the social-psychological factor in manifesting the group's creative potential.

Our purpose was to make a sociometric analysis of the successfulness of learning activity for students in a group in regard to the features of the group's structure for socialization. The experiment was conducted in the 1967-1968 school year with Course Two students in the day-school

USSR

UDC 621.314.58(088.8)

VOLKOV, I.V., LIPKOVSKIY, K.A., MEL'NICHUK, L.P., GRECHKO, E.N. [In-t elektrodinam. AN USSR--Institute Of Electrodynamics, AS, UkrSSR]

"Frequency Converter"

USSR Author's Certificate No 265256, filed 27 May 68, published 22 June 70 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B578P)

Translation: A frequency converter with a d-c section includes a single-rectifier [ventil'] series inverter at the output. With the object of improving the energy characteristics and increasing the security between the rectifier [vypryamitel'] and the source of a-c current, a converter of a source of voltage into a source of current (e.g., an inductive-capacitance converter) is included. 2 ill. A.S.

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Mechanical Properties

USSR

UDC 669.15-194:669.14

NIKITSKAYA, V. A., PYATAKOVA, L. L., POLTAVETS, N. A., SHUBINA, S. A., KUZNETSOVA, L. M., VOLKOV, L. G., BARANOV, V. Ya, and CHEREDNIK, L. Ye., Metallurgical Plant imeni Dzerzhinskiy, Dneprodzerzhinsk Industrial Institute imeni M. I. Arsenichev

"Improvement of Mechanical Properties of Hot-Rolled 10KhSND Steel"

Moscow, Metallurg, No 1, Jan 73, pp 16-17

Abstract: Experimental data are presented on the effects of chemical composition, method of final deoxidation, and temperature at the end of rolling on the level of mechanical properties and the amount of waste of 10KhSND steel in the hot-rolled state. The effects of C, Mn, Si, and Cr and their summary effect on the impact strength and the ultimate strength (yield) of 10KhSND steel deoxidized in the ladle with aluminum (1000 g/ton) and ferrotitanium (500 g/ton) are discussed by reference to diagrams. Best results in improving the mechanical properties and in decreasing the amount of waste were obtained by applying calciosilicate (2000 g/ton) and by reducing the rolling temperature to 900 °C at the same time. The use of calciosilicate in the final deoxidation of steel in the open-hearth shop of the Plant imeni Dzerzhinskiy decreased the amount of waste by 5-5.5 times. Two figures, one table.

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USSR UDC: 621.396.677

VOLKOV, L. I., editorial staff of the journal "Radiotekhnika i elektronika", Academy of Sciences of the USSR

"On a Nonequidistant Antenna With Difference Radiation Pattern"

O neekvidistantnoy antenne s raznostnoy diagrammoy napravlennosti (cf. English above.), Moscow, 1970, 5 pp, ill. bibliography of one title (No 2517-71 Dep.) (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5B37 DEP)

Translation: The method of eigenvalues is extended to the case of synthesis of a nonequidistant antenna with a difference radiation pattern. The amplitude coefficients of the B_k-discrete antenna distribution shaping the difference radiation pattern

$$R(u) = \sum_{k=1}^{N} B_k \sin(u x_k),\ x_k = 2d_k/\lambda,\ u = \pi \sin\theta$$

are expressed in terms of the inverse Fourier transform of the function R(u) with the corresponding coefficients. An equation is derived which defines the position of the antenna elements as a function of the coordinates of the first element. The special case $x_1 = 0.5$ corresponds to an equidistant array. It is shown how the method can be used for calculating the amplitude coefficients and coordinates of antenna elements with a difference radiation pattern of sectoral form. Annotation.

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USSR

UDC: 621.3.083.8:531/768

BYKOV, V. A., VOLKOV, L. N., VOLNYANSKIY, V. N., KISHCHENKOV, O. V., SARINGULYAN, Ye. Kh., FILATOV, V. M.

"A Digital Accelerometer"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 31, Nov 71, Author's Certificate No 317977, Division G, filed 26 Feb 70, published 19 Oct 71, p 167

Translation: This Author's Certificate introduces a digital accelerometer which contains a sensing element with moment and position pickups, and an amplifier with its input connected to the position pickup, while the output is connected to the moment pickup through a series circuit comprised of a pulse-duration modulator and a feedback pulse shaper. The device also contains a pulse generator connected through a switch to a counter. As a distinguishing feature of the patent, accuracy is improved by including a comparison unit connected to the amplifier output, and a control unit whose output is connected to the controlling input of the switch. One input of the control unit is connected to the output of the comparison unit, and the other is connected to the modulator output.

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Oscillators and Modulators

USSR UDC: 621.373.431.1(088.8)

VOLKOV, L. N., Scientific Research Institute of Direct Current"

"A Multivibrator Based on Transistors of Opposite Conductivity Type"

USSR Author's Certificate No 268487, filed 3 Jun 68, published 18 Aug 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G230 P)

Translation: This Author's Certificate introduces a multivibrator with a capacitor and charging resistor connected in the emitter circuit of the input transistor. To stabilize the duration of the output pulses, two voltage dividers are connected between the poles of the voltage source. One divider is made up of two resistors, one of which is shunted by the emitter-collector junction of the output transistor, and the other divider is formed by two resistors interconnected by the emitter-collector junction of the input transistor.

USSR

UDC: 669.018.8

TOMASHOV, N. D., CHERNOVA, G. P., and VOLKOV, L. N., Institute of Physical Chemistry, Academy of Sciences USSR

"Effect of Palladium on the Corrosion and Electrochemical Behavior of OKh25N6T Steel"

Moscow, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 425-427

Abstract: This study concerns the effect of palladium on the corrosion of OKh25N6T steel in 10 and 20% sulfuric acid at 100°C and free access of air. The study shows that in 20% sulfuric acid at 100°C the corrosion rate of OKh25N6T steel alloyed with palladium is lower by one order of magnitude. However, since the corrosion potentials of steels with palladium fail to attain stable passivity, the steels continue to dissolve at a considerable rate. In 10% sulfuric acid at 100°C, a steel with 0.5 palladium after a period of active dissolution is in a completely passive state and the corrosion rate is four orders of magnitude lower than in passive-active state. The obtained data suggest that the passivation of chromium steels alloyed with nickel (6%) and palladium (0.1--0.5%) occurs in two stages. The first one

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USSR

TOMASHOV, N. D., et al, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 425-427

(at a potential of -0.22 v) is controlled by the buildup of nickel on the surface of the alloy, while the second (-0.12 v) -- is controlled by the buildup of palladium. The nickel buildup stage is completed by the partial nickel passivation to its stationary potential (-0.12 v); the palladium buildup stage results in a more thorough passivation to potential of +0.01 v which corresponds to the cathodic process of hydrogen liberation on palladium. Steels with 0.5 palladium affected by oxygen depolarization (with free access of air) may even exhibit a more thorough passivation up to potentials of the order of 0.5 v followed by a steep rise in corrosion resistance.

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USSR UDC 612.821-053

VOLKOV, L. V., and MOYISEYEVA, Kiev Institute of Physical Culture, Kiev

"Determination of the Type of Higher Nervous Activity on the Basis of the Aftereffects Produced by a Multidimensional Stimulus"

Kiev, Fiziolohichniy Zhurnal, Vol 19, No 3, May/Jun 73, pp 297-30

Abstract: To determine the type of higher activity in experiments conducted on school children, the aftereffects (latent reaction periods) following the action of a multidimensional (visual and auditory) stimulus were measured by means of a portable transistor reflexometer. On the basis of psychophysiograms that were plotted by using the data obtained, one could differentiate between four types of higher nervous activity (excited, balanced, inhibited, and inert) among the subjects on whom the experiment was performed.

VOLKOV, M

SKIPETROV, Pavel Aleksandrovich CPSU
VOLKOV, M. CPSU

CPSU

PARTY CRITICISM LEVELED AT ECONOMICS INSTITUTE OF USSR ACADEMY OF SCIENCES

[Article by P. Skipetrov, Head, Sector, Division of Science and Educational Institutions of the CC CPSU; and M. Volkov, Consultant to the Division of Science and Educational Institutions of the CC CPSU; Moscow, Ekonomicheskaya Gazeta, Russian, No 9, February 1972, pp 11-12]

Under the leadership of the Communist Party, the Soviet people are striving to implement the grandiose tasks in communist construction advanced by the 24th Congress of the CPSU for the successful fulfillment of the Ninth Five-Year Plan for the development of the USSR national economy. The development of Marxist-Leninist economic theory, whose influence on economic life is mounting under present conditions, will play an important part in the resolution of these problems.

The 24th Congress of the CPSU called upon the science of economics to make a decisive change in its study of the urgent problems of communist construction, to bring scientific research into greater conformity with party policy, with the activity of party and government organs in the elaboration of a strictly scientific, integrated approach to the resolution of the key economic problems for the immediate and more distant future.

Among the measures enacted by the CC CPSU for implementing the decisions of the 24th Party Congress in the realm of the science of economics, an important place belongs to the decree entitled "Concerning the Work of the Party Organization of the Institute of Economics of the USSR Academy of Sciences in Fulfilling the Decree of the CC CPSU 'On Measures for the Further Development of the Social Sciences and for Elevating Their Role in the Building of Communism.'" The former decree is presently under discussion by the party organizations of scientific research institutes in the humanities and of vuz social science departments. The decree is important in many ways.

Acc. Nr: AP0046222 V Ref. Code: UR0646

PRIMARY SOURCE: Teoreticheskaya i Matematicheskaya Fizika, 1970,
Vol 2, Nr 2, pp 197-209

THE METHOD OF THE DESCRIPTION OF NONRENORMALIZABLE INTERACTIONS WITH THE ACCOUNT OF UNITARITY

M. K. Volkov

The unitary procedure is developed for the construction of the Fourier-transform of the two-point Green function, which is valid for the local as well as non-local theories with nonrenormalizable interactions. The spectral representations of two-point functions are found. It is shown that the functions under consideration possess in the momentum space the branching point of logarithm type with the respect to g^2 at $g^2 = 0$. The cases of the massive as well as the massless scalar particles are considered.

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UDC 615.272.6:547.466.64].015.45:612.128

VOLKOV, M. S., SHMELEVA, L. T., and TSVETOVA, G. M., Sverdlovsk Medical Institute

"Changes in Transaminase Activity in the Blood and Some Tissues After the Administration of Glutamic Acid Under Normal Conditions and After Hypoxia"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 4, 1971, pp 56-58

Abstract: Injection of healthy rats with glutamic acid (1 mg/g) had no effect on alanine and aspartate aminotransferase activity in blood serum, but it significantly increased the activity of both enzymes in the liver and thyroid. One hour's exposure to hypoxia (in a pressure chamber) significantly increased the activity of both enzymes only in serum, but had a slight effect on such activity in the tissues compared with the control. In rats given glutamic acid before they were placed in the pressure chamber, hypoxia significantly increased the activity of both transminases in the liver. Enzyme activity also increased in serum and in the thyroid under the influence of glutamic acid, but the increase was significant only in the case of aspartate aminotransferase.

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USSR UDC: 531/534:001.8

VOLKOV, M. S.

"Oscillations of a Liquid Ball and Motion of a Material Point in a Common Gravitational Field"

Byul. In-ta teor. astron. AN SSSR (Bulletin of the Institute of Theoretical Astronomy, Academy of Sciences of the USSR), 1970, 12, No 6, pp 463-469 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4A30)

Translation: The authors consider the problem of oscillation of a homogeneous ball with a solid spherical core and a liquid shell, and motion of a material point in a common gravitational field. The oscillations of the liquid body in the neighborhood of the equilibrium position, and the motion of the material point in the gravitational field of the oscillating ball are determined in the first approximation. The initial equilibrium figure is a ball which has a solid spherical core and a liquid shell and is bounded by some sphere. Motion of part of the liquid shell is assumed to be potential motion. The surface of the oscillating homogeneous liquid is determined in the first approximation, assuming that undisturbed motion is circular. M. A. Idin.

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USSR UDC 577.156:612.44

VOLKOV, M. S., Recommended by the Department of Biochemistry, Sverdlovsk Medical Institute'

"Changes in the Proteolytic Activity of the Thyroid Gland After Administration of Glutamic Acid in the Normal and in the Hypoxic State"

Moscow, Biologicheskiye Nauki, No 4, 1971, pp 39-41

Abstract: Experiments were performed with 46 male rats in four groups. The animals in the first two groups were studied under normal conditions, those of groups 3 and 4 were kept in a state of hypoxia (1 hr in a pressurized chamber or at an altitude of 8,000 m). Neutralized glutamic acid was introduced subcutaneously at a dose of 1 mg per 1 g or body weight. The control animals received the same volume of physiological solution. The rats were sacrificed 1/ 1/2 hr after introduction of the solutions and, in the case of pypoxia, immediately after they were removed from the pressure chamber. The proteolytic activity of the thyroid was determined according to the R. M. Usmanova method with thyroid homogenizate, for which the tyrosine content was determined according to the Folin method. It was found that the proteolytic activity of the thyroid is reduced in the state of hypoxia. Previous introduction of glutamic acid considerably enhanced the activity in the state of hypoxia but had no effect on the activity in animals kept under normal conditions. 1/1

VOLKOV, M.V.

Traumatology
+
orthopedics

JPRS 56097
25 May 72

UDC: 371.91:616.7-053.2

EXPERIENCE OF ORGANIZING BOARDING SCHOOLS FOR THE EDUCATION AND TREATMENT OF CHILDREN WITH SKELETOMUSCULAR PATHOLOGY

[Article by M.V. Volkov, Central Institute of Traumatology and Orthopedics imeni N.N. Priorov, Moscow; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 4, 1972, pp 48-52]

The program of the CPSU states: "The Party deems it to be one of the most important tasks to provide for education, starting at the earliest age, of a physically strong young generation with harmonious development of physical and spiritual forces."

Our socialistic government is concerned with the constant improvement of national health. One of the most important problems of enormous significance is the control of child disability. Not only physicians and pedagogues, but the entire Soviet people are involved in resolving this noble problem.

Prevention and treatment of congenital and acquired deformities and pathology of the skeletomuscular system are not easy tasks. Most such patients require observation and periodic treatment for many years, sometimes until they stop growing.

In spite of the fact that significant success has been achieved with regard to development of the traumatological and orthopedic network serving the child population, we can still not provide each child with skeletomuscular pathology and deformity with the necessary lengthy treatment in the therapeutic and prophylactic institutions of the Ministry of Health system. And this especially since we now could not conceive of treatment of a sick child apart from his upbringing, education, and preparation for a future useful life.

Even the founder of our pediatric orthopedics and traumatology, G.I. Turner, dreamed of creating an institution in which "physical orthopedics, i.e. correction of physical defects would be combined with orthopedics of the sick child's personality, in which the doctor and the pedagogue would collaborate closely." The specialized boarding school is such an institution: there the solidarity of doctor and pedagogue is particularly manifest, there beneficial conditions are provided for combining education and upbringing with

USSR

UDC 616.71-089:615.846

POLYAKOV, V. A., Department of Traumatology, Central Order of Lenin Institute for the Advanced Training of Physicians, and VOLKOV, M. V., Chair of Orthopedics and Rehabilitation, Central Order of Lenin Institute for the Advanced Training of Physicians

"Cutting of Bones and Soft Tissues by Ultrasound in Reconstructive Surgery"

Leningrad, Vestnik Khirurgii imeni I. I. Grekova, Vol 106, No 4, Apr 71, pp 71-74

Abstract: The use of various saws, chisels, osteotomes, etc. during surgery has serious drawbacks. These include the formation of cracks and splinters in the bones being cut and the difficulty of operating in restricted or inaccessible places. These drawbacks can be avoided by the use of ultrasound saws or knives which operate by means of waveguides. The latter transform electrical oscillations into mechanical oscillations. More than 200 experiments have been done in the laboratory of the Department of Traumatology of the Central Institute for the Advanced Training of Physicians on the cutting of bones by various methods. Long-term experiments on animals did not show any harmful influence of ultrasound in the required dosages on the organism. More than fifty operations of the

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USSR

POLYAKOV, V. A., and VOLKOV, M. V., Vestnik Khirurgii imeni I. I. Grekova, Vol 106, No 4, Apr 71, pp 71-74

following types have been performed on surgical patients: trepanation of the skull, resection of various bones due to tumors or fractures, removal of transplants and beds for them, etc. The ultrasound saw has particularly great advantages during work in a limited operating field. It permits the cutting of a bone through a 2-3 cm opening. Ultrasound equipment is also much less traumatic than standard mechanical methods due to the small amount of pressure needed on the instrument. The ultrasound knife is particularly indicated in the removal of scars of all sorts and in plastic surgery. The equipment, however, requires further development and improvement.

Organ and Tissue Transplantation

USSR

UDC: 616.71-089.843-07

GOVALLO, V.I., Doctor of Medical Sciences, VOLKOV, M.V., Corresponding Member Academy of Sciences USSR, and BELOTSKIY, S.M., Central Scientific Research Institute of Traumatology and Orthopedics

"Bone Homotransplantation as a Biomedical Problem"

Leningrad, Vestnik Khirurgii imeni, I.I. Grekov, No 2, 1970, pp 103-106

Abstract: Immunological response of recipients of transplanted homologous bone is discussed on the basis of the author's observations and literature data. A historical analogy with kidney transplantation development is made. Unlike skin or kidney transplantations, the immunological reaction of a recipient of bone graft tissue appears about a year after surgery; this is probably due to anatomical properties of the bone graft, its vascularization, and preservation sequelae. At the same time, clinical signs of rejection may be noted in x-rays. Immunological selection of donors for bone grafts is strongly recommended, together with immunosuppressive treatment (using antilymphocyte serum), because too many of the attempts ended up in rejection of the bone-articular and articular homografts.

1/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--GENETIC PROBLEMS IN THE STUDY OF SYSTEMIC CONGENITAL ORTHOPAEDIC
DISEASES -U-
AUTHOR-(04)-VOLKOV, M.V., MEYERSON, YE.M., NECHVOLODOVA, O.L., YUKINA,
G.P.
COUNTRY OF INFO--USSR

SOURCE--ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE, 1970, NR 4, PP 8-14

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CIRC ACCESSION NO--AP0108808
UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0108808

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INHERITED SYSTEMIC BONE DISEASES BELONG TO HEREDITARY AFFECTIONS OF THE CONNECTIVE TISSUE WITH MARKED SKELETAL AND EXTRASKELETAL LESIONS, AND CONSTITUTE A LARGE GROUP OF DISEASES WITH A WIDE RANGE OF CLINICAL MANIFESTATIONS. A NUMBER OF CLINICAL SIMILAR SYSTEMIC BONE DISEASES ARE THE RESULT OF MUTATIONS IN VARIOUS LOCUSES AND REPRESENT GENOCOPIES. THE CORRELATION AND INTERDEPENDENCE BETWEEN THE CLINICO ROENTGENOLOGIC, LABORATORY AND GENETIC METHODS OF INVESTIGATION IN HEREDITARY SYSTEMIC BONE DISEASES IS DISCUSSED. THE GENIC MUTATIONS ARE CONSIDERED AS THE CAUSE OF DEVELOPMENT OF SPORADIC CASES OF THESE DISEASES, AND THE IMPORTANCE IS STRESSED OF THE KINDRED AND STUDY OF ISOLATES IN THE ELUCIDATION OF THE RECESSIVE FUND OF HEREDITARY MUTABILITY. THE ROLE OF DIAGNOSIS OF MICROSIGNS AND THE EFFACED FORMS OF DISEASES IN THE STUDY OF THE PENETRABILITY AND EXPRESSIVITY OF GENES IS DISCUSSED. FACILITY: TSENTRAL'NOGO INSTITUTA TRAVMATOLOGII I ORTOPEDII.

UNCLASSIFIED

USSR

UDC 621.382.3

BOGACHEV, V.M., VOLKOV, Y.V.

"Equivalent Circuits For A Transistor With A Ring-Shaped Emitter"

V sb. Dokl. nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot za 1968-1969 gg. Mosck. energ. in-t, 1970 g. Sekts. Radiotekhnicheskaya. Podsekts. Obshch. radiotekhniki (Report Of The Scientific-Technical Conference On The Results of Scientific-Research Work During 1968-1969. Moscow Power Engineering Institute, 1970. Radio Engineering Section, General Radio Technology Subsection--Collection Of Works), Moscow, 1970, pp 90-100 (from RZh--Elektronika i yeye primeneniye, No 6, June 1970, Abstract No 6B206)

Translation: During an analysis of a distributed model transistor with a ring-shaped emitter, three regions are defined: active, passive, and peripheral. The analysis is performed with the following assumptions: 1) The exterior surfaces of the emitter and collector junctions and also the interfaces between the active, passive, and peripheral regions are considered equipotential; 2) The flow of charge carriers is assumed to be two-dimensional; 3) The edge effects and the irregularity of direct current density along the junction are not taken into account. These assumptions made it possible to consider each of the regions defined as an independent long line, and the overall equivalent circuit of a transistor describes their series-parallel

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USSR

BOGACHEV, V.M., et al. Dokl. nauchno-tekhn konferentsii...Moscow, 1970, pp 90-100

connection. As a result of the analysis, equivalent circuits are obtained for a
two-dimensional model of a transistor with a ring-shaped emitter and two types of
lead outs for the base-- exterior and central. The frequency relations of the par-
ameters of these circuits as quadripoles are entirely identical, and consequently
precise conversion of one circuit to another is possible. One of the circuits is
preferable during computation in a system of h- and z-parameters; the other during
use of the Y-parameters. 2 ill. 6 ref. V.R.

Surgery

USSR

UDC 577.44

POLYAKOV, V. A., Professor, NIKOLAYEV, G. A., Corresponding Member, Academy of Sciences, USSR, and VOLKOV, M. V., Academician, Academy of Medical Sciences USSR

"Biological Welding and Tissue Cutting"

Moscow, Priroda, No 12, 1972, pp 40-45

Abstract: Present methods of cutting tissues, both soft and hard (bones) involve a great deal of physiological trauma to the tissues and the entire organism, and in many instances delay healing. In 1964 studies were commenced at the Moscow Higher Technical College on the application of ultrasound waves to the cutting of biological tissues, as well as their "welding" (fusion). In essence, the approach consisted of transforming ultrasound energy into mechanical oscillations by means of wave guides, which may be variously shaped for different tasks. In the cutting of biological tissues such wave guide "scalpels" move with an amplitude of about 80 μ, and the temperature in the immediate zone varies from 50-170°. Approximation (welding, fusion) of tissues may be accomplished with the appropriate wave guide in the case of bones by solubilizing the collagen matrix and permitting it to fuse. In the latter procedure an adhesive, cyacrin is employed which was developed in 1963 by A. M. Polyakova and O. V. Smirnova.

USSR

POLYAKOV, V. A., et al, Priroda, No 12, 1972, pp 40-45

Cyacrin is a sterile and nontoxic substance and is gradually resorbed in the living organism. Ultrasound enhances the polymerization of cyacrin and its penetration into the body tissue to a depth of 40-200 μ. The strength of such fused bony tissues varies from 320-580 kg/cm^2. Histologic studies conducted on animals have shown that tissues sectioned in this manner heal normally, going through all of the characteristic cellular stages. The application of these procedures to man began 5 years ago, and up to the present time over 800 patients have been treated in such manner in surgery of soft and bony tissues. Although attention must be given to unforeseen side effects or disadvantages that may become apparent, it seems that the application of the ultrasound procedures should open up new therapeutic vistas in surgery.

2/2

USSR

UDC 539.1.074.2

VOLKOV, N. G., GORBACHENKO, G. M., and LYAPIDEVSKIY, V. K.

"Determining the Saturation Current in an Ionization Chamber from Two Experimental Points"

Moscow, Pribory i Tekhnika Eksperimenta, No 1, 1973, pp 94-96

Abstract: The authors note that measurement of the saturation current in an ionization chamber at high radiation intensities is determined by computational methods, which are not always accurate. They therefore propose a highly accurate way of making this measurement from two arbitrary points on the volt-ampere characteristic of the chamber. Use is made of two equations: $I = I_s \sin 2\xi/2\xi$, and $U = Bf(\xi) \cos \xi/\xi$: in which I and U are the current and voltage in the chamber; I_s is the saturation current; B is a constant whose value depends on the radiation intensity, the chamber dimensions, and the gas characteristics; ξ is a parameter varying from $\pi/2$ to 0; and $f(\xi)$ is a correcting function. The accuracy of this method is explained, and a way of simplifying the procedure under certain conditions is presented. The authors thank M. S. Kozodayev for his comments.

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USSR

VOLKOV, N. I., ZATSIORSKIY, V. M., KRYLATYKH, Yu. G., MAKSIMOV, N. M., NEVERKOVICH, S. D., SARSANIYA, S. K., CHEREMISINOV, V. N., and SHIRKOVETS, Ye. A., State Order of Lenin Central Institute of Physical Culture

"Physiological Characteristics of Repeated Exercise Done at Different Heart Rates"

Moscow, Teoriya i Praktika Fizicheskoy Kul'tury, No 5, 1971, pp 23-28

Abstract: Lung ventilation, oxygen consumption, and release of "excess" CO_2 were measured in 3 skilled cyclists after repeated exertions on a bicycle ergometer with different lengths of work and rest periods. Each subject performed 5 variations of the experiment at 3 heart rates - 150, 165, and 180 beats/min. The periods of exertion were 1.5, 3, 7.5, 15, and 30 min. The nature of the physiological reactions to the repeated exercise varied considerably with the length of the work and rest periods. Oxygen consumption was highest when the repeated exercise was done at a heart rate of 180 beats/min with work periods of up to 3 min. Lung function was most efficient when the heart rate was over 150 beats/min and the exercise period was less than 7.5 min. Repeated exercise at 165 beats/min for about 7.5 min had the greatest effect on tissue utilization of oxygen.

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USSR

VOLKOV, N. I., IORDANSKAYA, F. A., and MATVEYEVA, E. A., Candidates of Biological Sciences, State Central Order of Lenin Institute of Physical Culture and All Union Scientific Research Institute of Physical Culture

"Change in Work Capacity of Athletes Under Conditions of Medium-Sized Mountains"

Moscow, Teoriya i Praktika Fizicheskoy Kul'tury, No 7, 1970, pp 43-48

Abstract: A study was made of the work capacity of 16 long-distance runners, bicyclists, and rowers on the Soviet Olympic team who participated in the 1968 games to check on the effectivenees of the training methods employed. Each athlete was examined three times: (1) in Moscow (at sea level) shortly before departing for Mexico, (2) the first week in Mexico City, and (3) the third week in Mexico City. All were tested on a bicycle ergometer and various physiological indices recorded - heart rate, level of oxygen consumption, blood pressure, and so forth. The results indicated that the main factor responsible for the initial decline in work capacity is the decrease in aerobic capacity. During the first week or period of "acute" acclimatization in Mexico City, the maximum aerobic capacity of the athletes was

USSR

VOLKOV, N. I., et al, Teoriya i Praktika Fizicheskoy Kul'tury, No 7, 1960, pp 43-48

found to decrease by 19.5% on the average. After two weeks of training the decrease in maximum O_2 consumption was 14%, a value that closely correlated with the maximum time of pedaling on the bicycle ergometer.

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USSR UDC: 621.373.431.1

VOLKOV, N. P.

"A Multiple-Phase Slave Multivibrator"

V sb. Introskopiya (Internal Inspection--collection of works), Moscow, 1970, pp 73-78 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G228)

Translation: The author considers the circuit of a multiple-phase slave multivibrator in which a series of time-shifted pulses is generated from a single triggering signal. The current taken from the power supply remains constant both during the rest period and under conditions of generation. Parameters are given for a practical fifty-channel circuit based on germanium transistors. Bibliography of four titles. N. S.

Concrete

USSR

UDC: 66.043.2

PIROGOV, A. A., YUTINA, A. S., RAKINA, V. P. and VOLKOV, N. V., Ukrainian Scientific Research Institute of Refractories

"Heat-Insulating Light-Weight Concretes"

Moscow, Ogneupory, No 4, Apr 72, pp 6-10

Abstract: A review is presented of the basic methods of producing heat-insulating light-weight concretes developed in recent years at the Ukrainian Scientific Research Institute of Refractories for service at temperatures from 1000 to 1400°C. Most extensive use has been made of heat-insulating concretes with various porous fillers, including porous corundum, porous alumina, kaolin, foamed chamotte, distended vermiculite, keramsit, agloporite, perlite, and granulated slags. The binders include alumina and Portland cements, liquid glass, orthophosphoric acid, and phosphates. Both the fillers and binders appear to be governing the fire properties of the heat-insulating concretes. The characteristics of high-alumina and aluminosilicate concretes and concretes with combined fillers, types of filler and binders, apparent densities, compressive strengths, heat

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USSR

PIROGOV, A. A., et al, Ogneupory, No 4, Apr 72, pp 6-10

conductance, and tentative service temperature are detailed in a table. Future trends point to more effective methods of producing special porous granulated fillers using distention and foaming. (2 illustrations, 1 table, 16 bibliographic references).

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USSR

UDC 621.396.677(02)

ARDAB'YEVSKIY, A. I., VOLKOV, O. A., VOSKRESENSKIY, D. I., GOSTYUKHIN, V. L., GRANOVSKAYA, R. A., GRINEVA, K. I., KRITSYN, V. A., MYAKISHEV, B. YA., FILIPPOV, V. S., CHEBYSHEV, V. V.

"Microwave Antennas and Devices. Calculation and Design of Antenna Arrays and their Radiating Elements. Textbook for Students at the Radiotechnical Specialized Institions of Higher Learning"

Antenny i ustroystva SVCh. Raschet i proyektirovaniye antennykh reshetok i ikh izluchayushchikh elementov. Uchebn. posobiye dlya stud. radiotekhn. spets. vyzov (cf. English above), Moscow, Soviet Radio, 1972, 320 pp, ill., 75 k. (from RZh-Radiotekhnika, No 6, Jun 72, Abstract No 5B32K)

Translation: Methods of calculating the basic parameters of antenna arrays with electric rocking of the radiation pattern and frequency and commutation methods of controlling the radiation pattern are discussed. A study is made of the structure of the optimal arrays with Dolf-Chebyshev distribution, the design of irised-wave guide and horn arrays and also methods of calculating the array elements: dielectric, rod, spiral, horn and director antennas.

1/1

Econ

TECHNICAL PROGRESS REQUIRES PLANNING

[Article by O. I. Volkov, Candidate of Economic Sciences; "Complex Planning of Technical Progress"; Novosibirsk, Ekonomika i Organizatsiya Promyshlennogo Proizvodstva, Russian, No 4, 1971, pp 33-38]

The 24th CPSU Congress emphasized the necessity of a new approach to the planning of scientific and technical progress. L. I. Brezhnov said at the 24th CPSU Congress, "The national economic plan must become a powerful key factor in scientific and technical progress. Up to now, the questions of utilization of the achievements of science and technology have not found enough expression in our plans. Also, a significant number of the ministries do not completely fulfill their established tasks. Another approach is necessary: the development of a complex program for further development of technology and, taking this into account, the preparation of all sections of the plan and its basic indicators."

We shall take a more detailed look at some methodological problems in complex planning of scientific and technological progress in a national economic cross section.

Until recently our centralized state planning included essentially only one part of the production process -- the output of products. Another no less important part of it, the technical development of production, remained practically beyond the limits of the single national economic plan even though technical development provides the structural, qualitative, and quantitative dynamics of production. In the plans for technical development of the branches and enterprises, as a basis there is an enumeration or some kind of list of measures for development of science and the creation and assimilation of new technology. But the measures listed in the plan have little connection with each other or with the most important indicators of development of product output. They do not

VOLKOV, O.I.

USSR UDC 669-172:541.12.036

KLEYN, G. A., OSIPOVA, L. Kh., GRISHKOV, G. N., MIKHAYLOV, S. M., and VOLKOV, O. V.

"Effect of Temperature on the Physical and Mechanical Properties of Oriented Molybdenum Single Crystals"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystsls of Refractory and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 153-158

Translation: A study was made of the effect of temperature (1,000°C) on the anisotropy of the physical and mechanical properties of molybdenum single crystals grown in the [001], [110], [111], and [112] directions. 3 Tables; 3 Figures; 8 Bibliographic References.

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Psychology

USSR

UDC 616.89:621.72

VOLKOV, P. P., KOROLENKO, Ts. P., NIKIFOROV, V. V., and SHUMILOVA, V. K., Novosibirsk Medical Institute

"Data on the Investigation of Mental Illness by Biological Methods and Mathematical Simulation"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Biologicheskikh Nauk, Vol 1, No 5, Apr 70, pp 112-118

Abstract: The simulation method is a new approach for the solution of problems in psychiatry. Biological and mathematical models are used. The combined use of both types of models is particularly effective in various fields of medicine. Problems on the borderline of various disciplines, such as pathophysiology, pathomorphology, pharmacology, microbiology, toxicology, etc. complicate the study of pathogenic, exogenic psychoses under clinical conditions. Furthermore, the study is made difficult by the fact that the group of cases to be examined and analyzed should be of the same type, from the etiological as well as from the clinical point of view. In addition, a complete series of clinical studies may be limited or inapplicable.

Staphylococcus infection and intoxication were used as models for the study of

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VOLKOV, P. P., et al, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Biologicheskikh Nauk, Vol 1, No 5, Apr 70, pp 112-118

general principles and of specific reactions of the central nervous system to injury.

Imizin and chlorazicin were used to produce intoxication psychoses, because they have a pronounced psychotropic effect. Clinical and experimental studies were used to explain several mechanisms of the therapeutic effect of these preparations. EEG studies indicated that therapeutic doses of these drugs produce slow bioelectrical activity. Toxic doses cause blocking of EEG responses to high-frequency stimulation. The blocking effect was similar to that evoked by central cholineblocking agents.

The data obtained indicate that the biological simulation method is extremely effective, and can be applied to the study of pathogenesis of exogenic psychoses and the mechanism of action of psychopharmacological drugs.

The simulation method was applied also to differential analysis of schizophrenia, and to mathematical analysis of epilepsy (organic, genuine, alcoholic, and traumatic), as well as to emotion syndromes (apathy and depression).

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USSR

VOLKOV, P. P., et al, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Biologicheskikh Nauk, Vol 1, No 5, Apr 70, pp 112-118

All these problems lie on the boundary of three disciplines: pathological physiology, psychiatry, and cybernetics. In this area, the approaches have not been worked out. Untried paths will have to be taken, and great difficulties and errors must be expected. One thing is certain: the application of the principles, ideas, and methods of biology and mathematics to psychiatry has a promising future.

USSR

UDC 678.06-419.8.677.521].05

VOLKOV, R. A., KOVALEV, V. A., and MITROFANOV, S. A.

"Flow Line for Fabrication of Fiberglass Lifeboats"

Moscow, Plasticheskiye Massy, No 6, 1971, pp 17-20

Abstract: The article describes a pilot line for the constant flow production of fiberglass lifeboats. Despite the difficulties encountered in the adjustment and introduction of the complex of equipment the result was a significant increase in labor productivity, as well as improved sanitary and hydienic conditions for the workers. The flow line is designed for the production of 1500 boats a year. The line makes provision for the production of single-layer and sandwich-type boats. The sandwich-type boats consist of an exterior and interior fiberglass shell, with the space between the shells filled with polyurethane foam. The line has two parallel flows for making the exterior and interior shells. The following operations are performed at sequentially arranged specialized work places: preparation of forming equipment; fabrication of the exterior and interior hull shells; hydroremoval of the shells; testing of the exterior shell for watertightness by filling with water; filling the space between the shells with polyurethane foam; installing of deck covers; assembling of machinery and equipment; testing of the boat; elimination of

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USSR

VOLKOV, R. A., et al., Plasticheskiye Massy, No 6, 1971, pp 17-20

minor defects found during the tests and painting of the boat; outfitting of the boat.

The flow line includes polymerization chambers equipped with individual ventilation and heating devices, a special device for the preparation and pouring of PPU-3S polyurethane foam, transport equipment (transfer-bar and intermittent conveyors), special equipment for making the exterior and interior shells of the boat hulls, and a traffic control panel.

The following are used to make the shells: polyurethane resin NPS-609-21 (STU [Sovnarkhoz Technical Specifications] 30-14366-65), glass cloths ASTT(b) - C_2-0 (MRTU [Interrepublic Technical Specifications] 6M-836-62), TZhS-0.56-0 (MRTU 6-11-62-67) and glass gauze SE-0-1 (MRTU 6-11-64-67).

2/2

1/2 020 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--MATHEMATIC DESCRIPTION OF THE FORMATION PRINCIPLES OF M,DIISOPROPYLBENZENE OXIDATION PRODUCTS -U-

AUTHOR-(02)-SIGOV, O.V., VOLKOV, R.I.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(4), 888-90 (PHYS CHEM)

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION KINETICS, PEROXIDE, PYROLYSIS, MATHEMATIC MODEL, ALKYL BENZENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1895 STEP NO--UR/0020/70/190/004/0888/0890

CIRC ACCESSION NO--AT0101939

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0101939

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC DATA WERE REPORTED FOR THE REACTION OF MONO ADN DIHYDROPEROXIDES OF C SUB6 H SUB4 (CHME SUB2) SUB2 IN THE 110-40PERCENT INTERVAL. THE REACTION WAS 1ST ODER OVER A WIDE RANGE OF CONCN. OF THEY HYDROPEROXIDES, AND THE RATE CONSTS. OF THESE AS WELL AS OF HOCME SUB2 C SUB6 H SUB4 CME SUB2 O SUB2 H ARE SUBJECT TO A SIMPLE STATISTICAL RATIO RULE. EMPIRICAL EQUATIONS WERE SUGGESTED FOR THE FORMATION OF PYROLYSIS OF THESE COMPDS., AS A SIMPLER METHOD OF EXPRESSING THE OVERALL KINETIC PICTURE THAN OBTAINABLE VIA THE USUAL SET OF DIFFERENTIAL EQUATIONS WHICH ARE DIFFICULT TO SOLVE FOR SPECIFIC SITUATIONS.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--REDUCTIVE CONDENSATION OF ACETOPHENONE -U-

AUTHOR-(02)-VOLKOV, R.N., TSYBIN, YU.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 794-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ACETOPHENONE, CONDENSATION REACTION, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2004 STEP NO--UR/0366/70/006/004/0794/0797

CIRC ACCESSION NO--AP0125593

UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0125593
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SELF CONDENSATION OF PHCOME,
UNDER REFLUX IN THE PRESENCE OF KI, H SUB3 PO SUB4, AND RED P GAVE
SMALLER THAN OR EQUAL TO 80PERCENT PHCOCH SUB2 CHPHME (I), TOGETHER WITH
TARS AND SIDE PRODUCTS AMONGST WHICH 1,3,5,TRIPHENYLBENZENE,
PHCH:CHCHPHME, PHCH SUB2 CH SUB2 CHPHME, AND 1,METHYL,3, PHENYLINDAN
WERE INDENTIFIED. FACILITY: VORONEZH. GOS. UNIV., VORONEZH,
USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--COMPOSITION OF PRODUCTS OF THE LIQUID PHASE OXIDATION OF
1,METHYL,3,PHENYLINDAN -U-
AUTHOR-(02)-VOLKOV, R.N., TSYBIN, YU.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3) 480-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OXIDATION, FREE RADICAL, CYCLIC GROUP, HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1420 STEP NO--UR/0366/70/006/003/0480/0485

CIRC ACCESSION NO--AP0112414
UNCLASSIFIED

2/2 014

CIRC ACCESSION NO--AP0112414 UNCLASSIFIED PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. H IN 1 POSITION OF 1,METHYL,3,PHENYLINDAN (I) IS MORE REACTIVE THAN THE 3 POSITION H. THIS WAS SHOWN BY COMPARING THE OXIDN. RATES OF 1,3 DIMETHYL,3,PHENYLINDAN (II), 1,1 DIMETHYL,3,PHENYLINDAN (III), AND 1,1,3 TRIMETHYL,3,PHENYLINDAN (IV). THE RELATIVE OXIDN. RATES OF II-III-IV ARE 3:1:0. ALSO THE ACIDOLYSIS OF I OXIDN. PRODUCTS GAVE PREDOMINANTLY 2,METHYL,4,PHENYL,2,CHROMANOL, 2,METHYL,4,PHENYL,2,CHROMENE (WHICH COULD BE FORMED FROM 1,HYDROPEROXY DERIV. OF I), AND IS LESS THAN 10PERCENT 4,METHYL,2,PHENYL,2,CHROMENE (WHICH WAS FORMED FROM 3,HYDROPEROXY DERIV. OF I). A FREE RADICAL MECHANISM OF I OXIDN. IS PROPOSED.

UNCLASSIFIED

Masers

USSR

UDC: 621.395:530.145.6:53

KRYLOV, Yu. K., VOLKOV, S. A.

"A Study of the Perturbation of Light Flux by the Products Formed When a Solid is Destroyed by Intense Electromagnetic Radiation"

Tr. Leningr. in-ta tochnoy mekh. i optiki (Works of the Leningrad Institute of Precision Mechanics and Optics), 1970, vyp. 67, pp 80-93 (from RZh--Radiotekhnika, No 1, Jan 71, Abstract No 1D421)

[No abstract]

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1/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--CAPACITY OF LABORATORY SCALE PREPARATIVE CHROMATOGRAPHY COLUMNS -U-

AUTHOR-(02)-SAKODYNSKIY, K.I., VOLKOV, S.A.

COUNTRY OF INFO--USSR

SOURCE--J. CHROMATOGR. 1970, 49(1), 76-83

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GAS CHROMATOGRAPHY, PARAMETER, ISOTHERM, ADSORPTION, CHEMICAL LABORATORY APPARATUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0929 STEP NO--NE/0000/70/049/001/0076/0083

CIRC ACCESSION NO--AP0134658

UNCLASSIFIED

2/2 014 UNCLASSIFIED

CIRC ACCESSION NO--AP0134658 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REALTION BETWEEN THE CAPACITY OF PREPARATIVE GAS CHROMATOGRAPHIC COLUMNS AND THE EXPTL. SEPN. PARAMETERS, E.G. COLUMN LENGTH AND TEMP., CARRIER GAS FLOW RATE, AND THE SELECTIVITY FACTOR, IS DESCRIBED, WHICH IS VALID FOR THE LINEAR PORTION OF THE SORPTION ISOTHERM. THE RELATION CAN BE USED FOR A SEMIQUANT. EVALUATION OF THE COLUMN CAPACITY. FACILITY: L. YA. KARPOV INST. PHYS. CHEM., MOSCOW, USSR.

UNCLASSIFIED

Stress Analysis and Stability Studies

USSR

UDC: 539.4

VOLKOV, S. D., DUBROVINA, G. I., Ural Polytechnical Institute, Sverdlovsk

"A Boundary Value Problem in the Mechanics of Brittle Fracture"

Kiev, Problemy Prochnosti, No 4, Apr 73, pp 48-52

Abstract: A mathematical model of a material is proposed in which external forces produce microstructural disruptions of continuity (microfissures in brittle fracturing). A closed system of equations of a boundary value problem in the mechanics of brittle fracture is derived for the proposed model. In the limiting special case where no damage has occurred, the equations of the boundary value problem become the known equations of the classical theory of elasticity of homogeneous isotropic or anisotropic bodies. A method is proposed for solving the boundary value problem of mechanics of brittle fracture of structural elements, assuming certain restrictions.

USSR

UDC: 678.5.06:539.38.001

KALYAGIN, M. F. and VOLKOV, S. D., Ural Polytechnic Institute imeni S. M. Kirov, Sverdlovsk

"Theory on the Distribution of Elastic Deformations in Two-Component Composites"

Riga, Mekhanika Polimerov, No 4, Jul-Aug 73, pp 616-622

Abstract: The authors propose a new method for calculating the rule associated with the distribution of random elastic deformation in composites with isotropic components. This method is based on the analogy of known methods which are used in studying the limit theorems in the theory of probability and on the use of a known solution to a nonlinear boundary value problem in the theory of elasticity of heterogeneous media in operator form. The validity of this solution and of the corresponding system of limitations has been verified by many researchers. It is shown that random deformations are distributed according to a binomial rule which is close to that for the sum of two normal distribution rules.

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USSR

UDC 539.3:4

VOLKOV, S. D., GIRS, V. N., DENISOV, Yu. V., KLINSKIKH, N. A., and KOMISSAROVA, M. L., Sverdlovsk, Ural Polytechnic Institute imeni S. M. Kirov

"On Methods of Solving Problems of Thermoelasticity"

Kiev, Problemy Prochnosti, No 5, May 73, pp 3-8

Abstract: The previously by one of the authors suggested new method of applying Green's functions of Laplace equation for derivation of universal algorithms for isothermic problems, which was propagated to problems of thermoelasticity (Ibid.; Volkov, S. D., et al., No 2, 1972), presented the solution by a series of quadratures the convergence of which was demonstrated on an example with already known solution. Some results of a further development of this method are reported. It is demonstrated that by known Green's function of Laplace equation of a given domain, the reduction to a series of quadratures can be applied to the solution of a disconnected boundary problem of

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USSR

VOLKOV, S. D., et al., Problemy Prochnosti, No 5, May 73, pp 3-8

thermoelasticity of homogeneous isotropic bodies. General conditions of the uniform convergence of this series are determined. The distribution of stresses in an infinite circular cylinder loaded with radial forces in an asymmetric and non-standard temperature field was determined. Twenty six formulas, four bibliographic references.

2/2

USSR

UDC 061.3(100):621.791.16

VOLKOV, S. S., Candidate of Technical Sciences

"Meeting on Ultrasonic Welding of Member States of the Council for Mutual Economic Aid"

Moscow, Svarochnoye Proizvodstvo, No 7, Jul 70, p 60

Abstract: A brief account is given of a meeting on ultrasonic welding, held in Magdeburg, East Germany on 10-15 November 1969. Welding specialists from East Germany, Poland, the USSR, and Czechoslovakia attended. East German investigations included studies on the effect of recrystallization on the formation of joints in ultrasonic welding; ultrasonic welding of printed circuits; and the development of oscillating systems and the technology of ultrasonic welding of volume plastics items. Polish works included studies on the effect of generator output power frequency (within 25-80 kHz range) and contact pressure on the quality of joints of thermoplastic materials, and the development of units for an ultrasonic spot weldor (1500 w). Soviet contributions dealt with the development of an approximate method for calculating the energy emitted in the contact zone during ultrasonic welding; weldability and strength of soft and hard plastics in ultrasonic welding; differentiation of thermoplastics according to their properties (modulus of elasticity, temperature range of polymer softening); and

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USSR

VOLKOV, S. S., Svarochnoye Proizvodstvo, No 7, Jul 70, p 60

development of the UP-20 installation for the ultrasonic welding of polystyrene items. Czech investigations included studies of the influence of the quality of the acoustic energy introduced in the welded joint and of the acoustic coupling between the welding tip and welding material on the mechanical properties of the joint; the development of the UZS-250 ultrasonic welding setup for seam welding of aluminum foils, up to 0.2 mm thick; and the development of the UZP-250 equipment for the welding of plastics or metals and plastics.

2/2

USSR

UDC:669.187.6

VOLKOV, S. Ye., PAVPEROVA, I. A., KLYUYEV, M. M., PUPYNINA, S. M., and FRENKEL, YA. A.

"Improvement of the Quality of Type Kh25N16G7AR (EI835) Steel"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 169-177

Translation: The possibility is studied of improving the quality of type EI835 steel by double electric slag remelting. The repeated electric slag remelting allows a significant reduction in the contamination of the metal with non-metallic inclusions. However, in order to produce metal of the highest quality, it is necessary to consider the temperature mode of the process and the composition of the flux.

The influence of the composition of the working flux on the nature of non-metallic inclusions following electric slag remelting has been established. For example, after remelting under a flux with increased content of basic oxides, the inclusions contain calcium oxide and magnesium oxide. Remelting beneath a flux, the composition of which included aluminum oxide, led to an increase in the content of alumina in the inclusions. Based on these facts, an assumption is made concerning the mechanism of interaction of slag and metal during the process of electric slag remelting. 4 figures; 3 tables; 3 biblio. refs.

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USSR

UDC 669.187.6

NIKULIN, A. A., ARTEM'YEV, V. D., VOLKHONSKIY, L. A., KLYUYEV, M. M., TOPILIN, V. V., VOLKOV, S. YE., and SHARAPOV, A. A.

"Study of Methods of Acting on Processes of Crystallization of Ingots During Electric Slag Remelting"

Proizvodstvo Chernykh Metallov (Production of Ferrous Metals -- Collection of Works), No 75, Metallurgiya Press, 1970, pp 161-167

Translation: Results are presented from a study of the control of crystallization of an ingot by acting on the drop transfer and hydrodynamic processes in the slag and metal bath by two methods, performed on a laboratory electric slag installation. The methods are remelting of electrodes moving eccentrically relative to the axis of the crystallizer, and remelting of electrodes in a longitudinal constant magnetic field, created by a solenoid wound around the cover of the crystallizer and supplied by a controlled direct current source. 3 figures; 2 tables; 5 biblio. refs.

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MATUSHKINA, L. I., KLYUYEV, A. M., DEDUSHEV, L. A., KOSYREV, L. K., VOLKOV, S. Ye., and SHARAPOV, A. A.

"Thermal Inertia in Electric Slag Remelting"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 167-169

Translation: The influence of stopping (for 1-5 min) the electric slag process on the final macrostructure of ingots of high-chrome heat-resistant steel type EI961, high-chrome manganese steel type EI835, and type ShKh15 ball bearing steel is studied.

The surface of the ingots produced is satisfactory with slight corrugations in the areas where the process was stopped. Obviously, the corrugations are caused by local disruption of the dynamic equilibrium between heat input and outflow.

However, the stopping of the process within the limits studied does not cause appearance of macrostructural defects, since under the conditions of electric slag remelting the metal bath has significant thermal inertia. 1 table.

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TITLE--TECHNICAL AND ECONOMIC COMPARISON OF ELECTROSLAG AND VACUUM ARC
REMELTING -U-
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RIVAL MERITS OF THE ELECTROSLAG AND VACUUM ARC REMELTING OF STEELS AND ALLOYS ARE DISCUSSED, CHIEFLY FROM AN ECONOMIC POINT OF VIEW. IN GENERAL IT WOULD APPEAR THAT VACUUM ARC REMELTING IS ABOUT 1.5 TIMES AS EXPENSIVE AS ELECTROSLAG REMELTING, ALTHOUGH FURTHER OPTIMIZATION OF THE EQUIPMENT INVOLVED SHOULD NARROW THE DIFFERENCE. AT THE PRESENT TIME, VACUUM ARC REMELTING IS ONLY RECOMMENDED FOR SPECIAL CASES IN WHICH THE QUALITY OF THE RESULT OUTWEIGHS COST CONSIDERATIONS.

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BUSHMELEV, V. M., TYURIN, YE. I., DUMCHEV, YA. P., KATAYEV, V. M., VOLKOV, S. YE., PUPYNINA, S. M., SHARAPOV, A. A., BAGLAY, V. M., MEDOVAR, B. I., LATASH, YU. V., Krasnyy Oktyabr' Plant, Central Scientific Research Institute of Ferrous Metallurgy and Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences Ukrainian SSR

"Production of 4-Ton Ingots in a Bifilar Electroslag Remelting Furnace"

Moscow, Stal', No 3, Mar 70, pp 236-238

Abstract: The article describes a bifilar electroslag remelting scheme developed at the Institute of Electric Welding imeni Ye. O. Paton, which provides for the melting in one crystallizer of two electrodes, isolated from each other, which are attached to one electrode holder and connected to the ends of the secondary winding of a single-phase transformer with the same power as in a single-electrode furnace. In order to obtain rectangular 640X460 ingots weighing 4 tons, one of the electroslag remelting furnaces of the Krasnyy Oktyabr' Plant, designed for

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BUSHMELEV, V. M., et al, Stal', No 3, Mar 70, pp 236-238

the production of 2-ton ingots according to the single-electrode scheme and equipped with a single-phase 1000-kva transformer, was remodeled for melting according to the bifilar scheme. Only the mechanical part of the furnace underwent alteration. Slag systems used for the melting included CaF_2-Al_2O_3, CaF_2-CaF_2-CaO-Al_2O_3, and CaF_2-CaO-Al_2O_3-MgO. It was found that the production of metal of satisfactory quality in the bifilar furnace requires the same degree of submersion of the electrodes in the slag bath, as well as keeping the electrode spacing unchanged during the melting. This was accomplished with the use of simple devices. The bifilar scheme approximately doubles furnace productivity and reduces electric energy consumption by 25-29 percent. Data are presented on the quality of 4-ton ingots of ball-bearing steel ShKh 15, structural steel 40KhNMA and stainless sheet steels 10Kh12NVMFA (EI962) and Kh23N18 obtained on the bifilar furnace.

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UDC 533.9.07

VOLKOV, T. F. and MOROZOV, A. I.

"The Magnetic System of a Tubular Multilens Accelerator"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol XLI, No 6, Jun 71, pp 1247-1256

Abstract: The main component of a tubular multilens accelerator, as proposed recently by Morozov and Shchepkin, is a system of coils which makes it possible to obtain a radial magnetic field. In the present article, the magnetic field of this type of system is computed; the need for this computation arose from the development of electronic and ion models of tubular multilens accelerators. As a first approximation, a system of infinitely thin rings or coils is considered. It is assumed that the system is sufficiently long so that the effect of the ends of the magnetic field on the middel portion of the field may be ignored. Equations describing the magnetic field are obtained and then extended to the case of a real accelerator consisting of a finite number of rings, although,as in the pervious case, it is assumed that the rings are infinitely thin. Formulas are obtained which allow one to calculate the magnetic field for an arbitrary number of rings, taking into consideration the effects of the ends of the field on the middle, these effects being of

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VOLKOV, T. F., and MOROZOV, A.I., Zhurnal Tekhnicheskoy Fiziki, Vol XLI, No 6, Jun 71, pp 1247-1256

considerable interest in the real case. The structure of the formulas shows that the middle portion of the magnetic field consists of the field of an infinite system plus the disturbance from the ends. Semi-infinite systems are also examined briefly. In subsequent articles, the dynamics of particles in tubular multilens accelerators will be analyzed.